characterized by the dryness, sunshine, light rainfall, extreme seasonal differences, and large diurnal temperature ranges of a mountain climate.

Third. The Pacific coast zone, with a mild and equable climate, due to the prevailing westerly winds from the neighboring ocean, and with marked latitudinal and seasonal variations in rainfall.

Professor Ward adds a brief but useful bibliography.—*F. O. S.*

THE THIRD CONVENTION OF WEATHER BUREAU OFFICIALS.

Peoria, Ill., was chosen for the meeting place of the Third Convention of Weather Bureau Officials, held on the 20th, 21st, and 22d of September of this year. Sixty-five officials of the Bureau, from every section of the country, were in attendance. The following papers were presented:

President's address.—Prof. Willis L. Moore.

Laboratory work in meteorology.—Prof. A. G. McAdie, San Francisco, Cal.

The Mount Weather Research Observatory.—Prof. F. H. Bigelow, Washington, D. C.

A symposium on the purposes of the Mount Weather Research Observatory.

Errors of instruments and the lines along which improvements should be sought.—Prof. C. F. Marvin, Washington, D. C.

Long-range weather forecasts.—Prof. E. B. Garriott, Washington, D. C.

Seasonal forecasts.—Prof. A. G. McAdie, San Francisco, Cal.

Amplification of forecasts for the benefit of perishable products.—Dr. W. M. Wilson, Milwaukee, Wis.

An aid in forecasting.—Mr. F. H. Brandenburg, Denver, Colo.

Report of board on revision of meteorological forms.

Forecasting fogs on the Gulf coast.—Mr. B. Bunnemeyer, Providence, R. I.

A popular account of the countercurrent theory of storms.—Prof. F. H. Bigelow, Washington, D. C.

Variations in insolation and in the polarization of blue sky light during 1903 and 1904.—Mr. H. H. Kimball, Washington, D. C.

A possible method for determining the direction and velocity of storm movement.—Mr. E. H. Bowie, St. Louis, Mo.

Temperature forecasts and iron ore shipments.—Mr. H. W. Richardson, Duluth, Minn.

Distribution of forecasts by telephone.—Dr. G. M. Chappel, Des Moines, Iowa.

Practicable rules for forecasting flood crest stages for Cairo, Ill.—Mr. P. H. Smyth, Cairo, Ill.

The Columbia River.—Mr. E. A. Beals, Portland, Oreg.

Diurnal periodicities in the climate of Baltimore.—Dr. C. L. Fassig, Baltimore, Md.

Instruction and research by Weather Bureau officials.—Prof. Cleveland Abbe, Washington, D. C.

A symposium on the teaching and position of meteorology in universities and other institutions.

Phenological observations at Wauseon, Ohio.—Mr. J. Warren Smith, Columbus, Ohio.

A study of rainfall on the west Florida coast.—Mr. B. Bunnemeyer, Providence, R. I.

Climatology of Porto Rico.—Mr. W. H. Alexander, Galveston, Tex.

Monthly statement of averages for rural press.—Mr. W. S. Belden, Vicksburg, Miss.

Irregularities in frost and temperature in neighboring localities.—Dr. I. M. Cline, New Orleans, La.

Former conventions of Weather Bureau officials.—Mr. James Berry, Washington, D. C.

A full report of the convention will be published as a bulletin of the Weather Bureau.

OBSERVATIONS FOR TWELVE MONTHS IN LASSA.

Climatic data from the forbidden city of Tibet has been obtained by M. Tysbikov, a Russian traveler, who resided in Lassa from August 15, 1900, until August 22, 1901. The following summary of his observations is taken from La Géographie, vol. 9, No. 1.

The year is divided into two seasons, the dry and the wet. (The influence of the monsoons of the Indian Ocean is felt even at this point.) In 1900 the dry season began toward the end of September; up to the end of April snow fell only twice. The rains began toward the middle of May, and 48 rainy days were counted up to the middle of September. The direction of the winds is in general from west to east. The mean temperature in the shade, observed three times a day during 235 consecutive days, is 5.2° C. at dawn, 14.5° at 1 p. m., and 9° at 9 p. m. The coldest month is December (mean for the three observations respectively —7.6°, +1.40°, —2.9°); the warmest month is June (14.6°, 22.8°, 17.2°). The large streams never freeze; the small ones are covered with only a thin layer of ice.

OBSERVATIONS AT THE FRANCO-SCANDINAVIAN STATION FOR AERIAL SOUNDINGS.

In a previous number of the REVIEW[1] Mr. Leon Teisserenc de Bort has described the station for systematic and continuous kite work, established by the cooperation of the French, Danish, and Swedish meteorological services at Hald, near Viborg in Jutland. In a recent communication to the Paris Academy of Sciences, Mr. Teisserenc de Bort gives some of the results of this work.[2]

Besides the meteorological observations, properly so called, a series of measurements of insolation have been made by Messrs. Holm and Jansson, our Swedish colleagues, with the Ångström pyrheliometer The maximum insolation, 1.314 small calories, was observed in July.

The barometric depressions, of slight extent, which pass over Jutland, are preceded by a change to the south in the lower wind, this movement taking place without any change in the upper currents. The rotation of the wind therefore begins in the lower levels and then rises into the region of the cumulus and the alto-cumulus. The temperatures obtained by the sounding balloons are not notably lower in the winter season than those that are obtained in the neighborhood of Paris; but we should note the very great decrease of temperature (0.9° per 100 meters) indicated on March 15, 1903, by a balloon that recorded a temperature of —38° at an altitude of 4400 meters, while a balloon sent up on the same day near Paris recorded only —17°. The day before, the temperature at the same height was about —16°, both at Hald and at Paris. The temperatures at the earth varied but 2° between these two days, while in the upper atmosphere they decreased more than 22°. This is a striking example of the now recognized fact that the variability of climate is greater at a certain height than near the ground.

Observations by kites have shown that in a great number of cases, even with rather low pressures, the winds from southwest to northwest diminish in velocity at a certain height. Sometimes this diminution has been gradual and in proportion to the increase in altitude; sometimes the wind remained quite strong or even increased in certain zones, especially in the neighborhood of cloud layers, and then fell suddenly to so low a velocity that the kites were arrested in their upward movement as if by an invisible ceiling.

It has been several times observed that such an increase in the wind as threatened to break the kite line has been followed by so marked a calm that the kites fell to the ground, with all the line, from a height of more than 1000 meters.

These facts, and others observed by us at Trappes and on the Mediterranean, show that we can not theorize on atmospheric phenomena as if they were continuous in time or space; such cases, on the contrary, are rare, and limited to certain atmospheric conditions.

WIND VELOCITY AND OCEAN WAVES.

In connection with a study of ocean waves[3] Dr. Vaughn Cornish has prepared a table showing the relation between their height and the velocity of the wind. Taking tables previously published by Desbois, Antoine, and Paris, in which

[1] Monthly Weather Review, April, 1903, vol. 31, p. 177.

[2] Comptes Rendus, June 27, 1904, vol. 138, p. 1736.

[3] On the dimensions of deep-sea waves and their relation to meteorological and geographical conditions. The Geographical Journal, London, May, 1904, vol. 23, p. 623–645.